



OPERATOR'S / OWNER'S MANUAL

MODELS TS-400, TS-500, TS-700B, TS-WSA

For your safety please read all safety precautions in this manual before operating your Terrasaw.

Thank you for purchasing a patented award-winning Terrasaw™, the world's most portable power trenching tool.

Your Terrasaw provides you with quick, easy and versatile trenching when and where you need it! The Terrasaw digs rapidly with minimum ground and turf disturbance, which enables a very quick site cleanup.

Before putting the Terrasaw to use, please read and follow all safety, assembly, operating and maintenance instructions.

Terrasaw Industries has a policy of ongoing product innovation and improvement. We therefore reserve the right to modify specifications, design and configuration without notification. In some instances product may differ slightly from that illustrated.

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Important Safety Information

To prevent serious injury:

All operators of the Terrasaw must read and fully understand this Terrasaw instruction manual before operation of the trenching unit.

All operators must use safety approved equipment as outlined by your local or national safety codes. Safety foot, leg, eye and ear protection should be worn at all times during operation of the Terrasaw trenching unit. In particular you must wear sturdy safety boots, preferably steel-capped, and keep feet well clear of the digging chain at all times.



Before you dig, check the location of **all** underground services, especially electric cables. Electric shock can cause severe or fatal injury.

Check that the power head, including handles, chain brake and all safety features are in good working order.

Ensure that Terrasaw is correctly fitted to powerhead, chains are correctly tensioned, and safety guards are in place. Before starting work, remove scabbard and inspect the digging chain for any damage.

When starting power head, use the correct safety starting techniques as outlined in your powerhead operators manual and ensure that the digging chain is clear of contact with the ground or any other object. For extra safety when starting, apply chain brake where fitted. Be aware that the chain will otherwise be in motion as soon as engine starts.

Important: Digging chain must be stationary when power head is at idle (refer to power head operators manual for correct idle adjustment).

Maintain a firm footing and a good grip on the power head handles during digging. We strongly advise trenching with the digging blade inclined back at a comfortable angle (25 to 30 degrees from vertical) rather than vertical. This tool is designed to dig to its designated depth when used at these angles. Digging with the blade vertical should be avoided as it will bring the moving chain dangerously close to the operator's feet/legs and will also increase operator fatigue.

If you are trenching on a sloping surface, always stand on the downhill side of the digging bar. In slippery ground conditions be particularly careful to maintain a firm footing and stand so that a sudden slip or loss of balance will not bring you into contact with the moving digging chain.

Minors should never be allowed to operate the Terrasaw.

Be aware that the digging blade may kick back if upper quadrant of the digging tip contacts solid ground or any obstruction, in a similar manner to a chainsaw timber blade.

When tuning or testing the Terrasaw, be sure to point the blade away in a safe direction as chain will instantly rotate at high speed and may throw off mud, stones etc. Always keep bystanders and small animals at a safe distance.

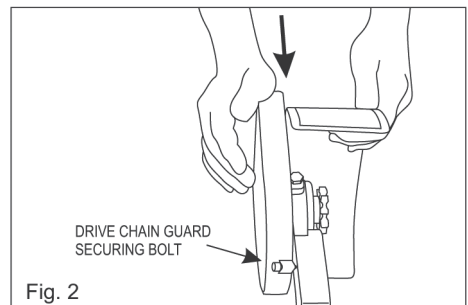
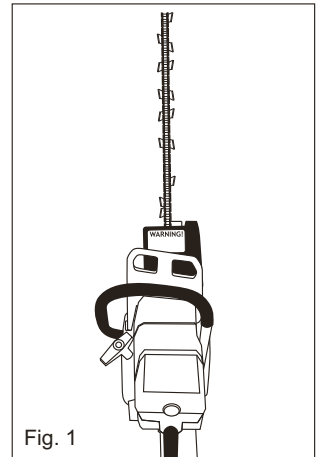
Ensure that you have no loose clothing etc. that may become entangled in the digging chain. Be aware that guards may become heated by exhaust during use.

When transporting or storing the Terrasaw use the protective chain scabbard supplied.

Assembly Instructions

[Note that when correctly assembled, the digging bar is centrally located and approximately in line with rear handle of power head (Fig. 1), giving the best possible balance and control.

1. Remove the powerhead chain side cover nuts and remove the side cover.
2. Wind the slack adjuster to give maximum slack.
3. Unscrew the drive chain guard-securing bolt (Fig 2). Slide chain guard out of channel on main block, by pushing firmly with the heel of your hand.



4. Loop the supplied Terrasaw™ drive chain over the large sprocket (Fig. 3).
5. Engage the drive chain with power head drive sprocket, ensuring the drive teeth are seated correctly (Fig. 4).

Warning: Fitting drive chain with too much tension will result in the premature wear and possible failure of the primary transmission system.

6. Reassemble the power head side cover to the power head ensuring that the chain adjuster is engaged with the Terrasaw bar and lightly tighten retaining nuts.
7. Using a screwdriver, adjust the drive chain so that the slack is taken up and a light finger pressure on the drive chain at midpoint yields approximately half a chain height deflection. Once the correct position is obtained, firmly tighten side cover retaining nuts.

Re-check tension and repeat Step 7 if required.

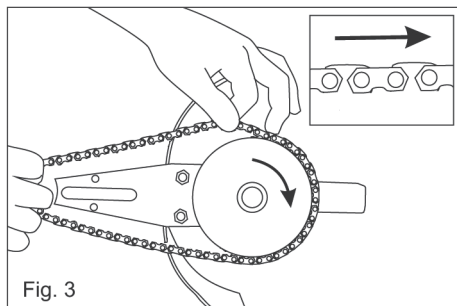


Fig. 3

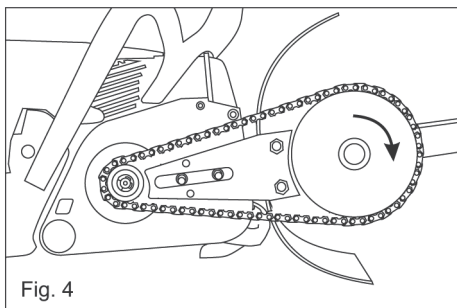


Fig. 4

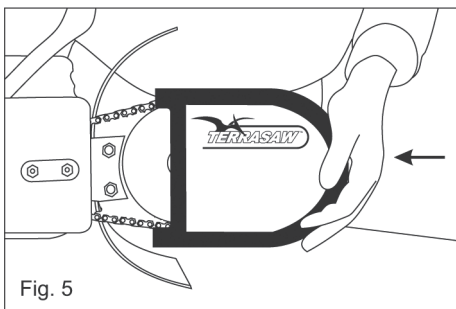


Fig. 5

Note: A new chain will require tensioning more frequently than one that has been in use for some time. Check the tension of a new chain after only a few minutes operation and thereafter at each refuelling or as soon as slack is apparent.

Remember: If adjustment is required ensure that the side cover nuts are re-tightened.

8. Using the aerosol chain wax provided apply a light spray while rotating the chain by hand, refer also Lubrication page 11. **DO NOT START ENGINE AT THIS TIME.**

9. Refit the Terrasaw drive chain guard. With securing bolt drawn back slide the chain guard into the retaining channel on main block and push firmly home with the heel of your hand (Fig. 5). Re-tighten the guard securing bolt.

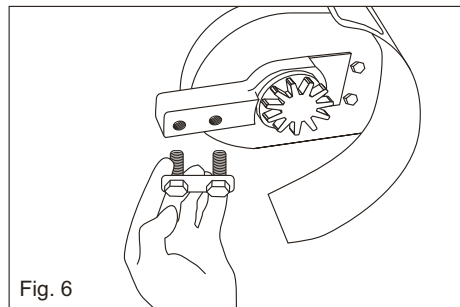


Fig. 6

10. Roll power head onto its right side (on a surface that will not scratch chain cover instructions, etc) so that you have a clear view of digging bar securing bolts. Using the spanner provided undo and set aside the two large securing bolts and large flat washer that (will) attach the digging bar to the main block of the Terrasaw (Fig. 6).

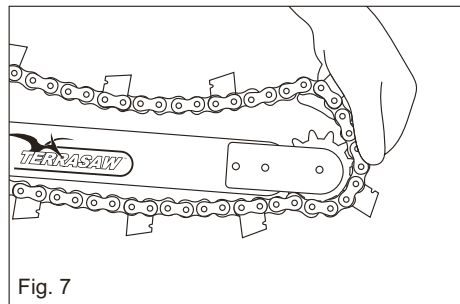


Fig. 7

11. Hold the digging bar as shown (Fig. 7), with the bar slot facing towards the main block body. **Note:** Digging bar is reversible, but the digging chain direction is critical (Fig. 8).

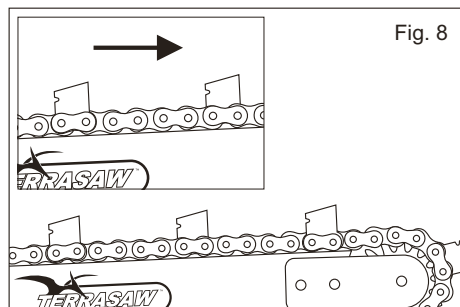


Fig. 8

12. Loop the digging chain around the nose sprocket of the digging bar (Fig. 7). **Note:** The digging chain must be assembled with the directional notches on rear/trailing edge of teeth as the chain runs along the top of the digging bar (Fig. 8). **Important:** Fitting digging chain in reverse will cause a dramatic loss of performance.

13. Holding the bar and chain in one hand, loop the digging chain over drive sprocket with the other hand. Engage the slotted section of bar to the matching raised section of the main block and slide the bar to lightly tension the chain (Fig. 9).

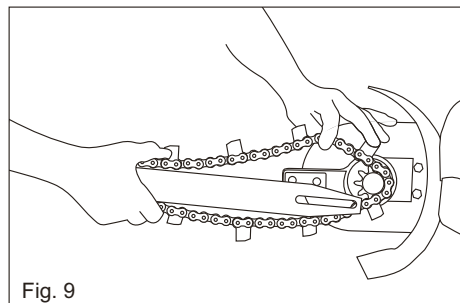
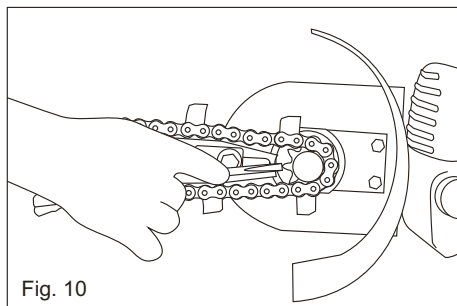


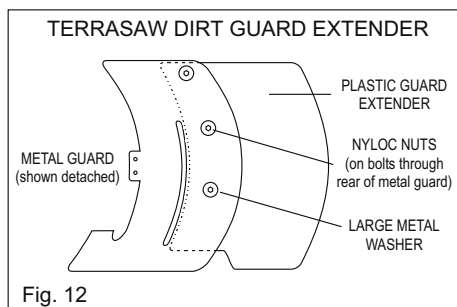
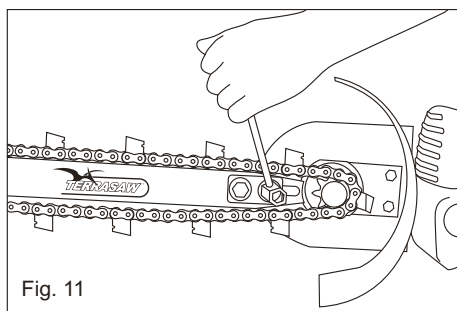
Fig. 9

14. Reinstall the large washer and two large securing bolts and lightly tighten.
15. Using a screwdriver, inserted in the tensioner slot (Fig. 10). Leaver the digging bar away from the Square main block. While keeping tension on the digging bar, securely tighten the bolts (Fig. 11).



Note: The chain tension should allow correctly installed chain to sag approximately half the height of the chain as measured in the middle of the bar (Fig. 11).

16. Fit the plastic dirt guard extender as shown in Fig. 12. Note that this fits on the outside of the metal dirt guard.
17. Your Terrasaw is now ready for operation! Please refer to both your Terrasaw and Powerhead user manual for correct and safe operation.



Before You Start Trenching

1. Give the machine a good visual inspection before starting/Re-starting.
2. Carry out all safety instructions as listed on page 2.
3. Check with local authorities for any underground services. Most utility providers (for example Telecom, local electricity and gas suppliers) provide a free cable location and advisory service, to prevent accidental disruption of services. In rural areas, check also with local farmers or landowners who may have detailed knowledge of utilities. Note: in many locations (e.g. along roadsides and near subdivisions) excavation may have occurred after utilities were laid. This can result in cables etc. being encountered unexpectedly at shallower depths than regulations would suggest.
4. Check along your desired trench route clearing any obstructions, branches, stones etc. and any other object which may either obstruct the trencher or cause you to slip/lose your footing. If a long continuous trench is planned, consider fitting the optional Terrasaw wheel support accessory.
5. **IMPORTANT: Use of the Terrasaw in Dusty Conditions**

In some fine dusty soils there is a risk that harmful dust may be drawn into and through the powerhead air filter resulting in damage to the engine. If dusty conditions are encountered special precautions must be taken (eg. the digging area should be dampened prior to trenching and/or a fine water spray used during operation, with filters cleaned frequently. Where practical, work with wind from behind the operator.

See also maintenance, cleaning & storage section on page 11.

Terrasaw Industries Ltd will not be liable for damage to any powerhead resulting from dust intake - refer warranty section.

Please feel free to contact us at any time if you would like further advice or guidance on this or any other aspect of using your Terrasaw.

Using Your Terrasaw™ : Some Useful Tips



CAUTION: UNDER NO CIRCUMSTANCES allow the digging chain to jam or bog to a standstill whilst holding throttle on as this will cause severe clutch damage. Refer also to powerhead manual.

1. Start the powerhead as per the manufacturers instruction manual. With a firm grip on the powerhead handles and a firm footing, start cutting trench with the Terrasaw blade at a comfortable angle (25 to 30 degrees from vertical), and slowly walk backwards along your desired line. In lighter soil types it may be necessary to do a final quick pass at the desired depth to clean out any remaining spoil.
2. Most chainsaw engines are designed to operate best and develop maximum power at near full throttle. The Terrasaw is designed for this and also operates well at high throttle settings, recommended when digging in difficult ground or at full depth. When trenching in confined or difficult areas however, particularly at shallow depths of 200mm or less, the use of very low throttle settings will provide extra safety and control.
3. When trenching freehand in particularly difficult soils the following technique is useful. Place the Terrasaw's metal guard on the ground and use this as a 'pivot point'. Using a pushing down motion on the top handle and a pulling up motion on the rear handle of the power head, allow the Terrasaw to dig to the depth you require. Lift the Terrasaw up and back and repeat the above. This method requires a quick final pass to even the bottom of the trench!
4. If you strike solid obstacles such as rock, concrete, timber etc. remove these before continuing. The Terrasaw is designed to dig earth, not large stones or large tree roots!
5. For wider trenches, simply dig two parallel cuts to the desired width and remove the remaining centre section by hand. If accurate trench placement is important, consider marking your desired line with spray paint or similar.
6. Regular checking/adjustment of chains will extend chain life!
7. After digging, brush the loose dirt off of the digging chain, and inspect the digging teeth for any damage. See Maintenance, Cleaning and Storage page 11.

Special Situations

1. The special Terrasaw digging tooth and tooth pattern is specifically designed to provide maximum digging speed in common soils with minimum friction and engine loading. However when digging in very compacted ground, hard clay pans etc. changing to the Terrasaw Alternative Dig Pattern Chain (refer pages 14 & 15) may be required. This pattern will assist in trench clearing.

To do this simply slacken and remove the digging chain, and swap for the Alternative Dig Pattern Chain (Supplied with new machines).

2. For digging in light or sandy soils containing fine hard stones, use the following technique. The Terrasaw digging chain should be at speed before contacting the ground surface and when the trench is complete, lift the blade clear before throttling off. This reduces the chance of stones jamming the nose sprocket. In these conditions it is also an advantage to run the chain with twice the normal amount of slack.
3. When digging at full depth in difficult wet pliable clays, it is advisable to take three or four passes to achieve the desired final depth, as this reduces operator fatigue and undue strain on the powerhead anti-vibration mounts.
4. When cutting curves or radius cutting (e.g. concrete lawn edgings, footings, building foundations, etc.) it is advisable to use several shallow cuts rather than a single cut at full depth.
5. When digging a trench across a farm road or raceway (e.g. for underground water pipes or electric fence cable), it is advisable to first loosen the compacted gravel/stones along the desired line. Use a pick or similar tool and remove any large rocks before trenching to avoid damaging your Terrasaw digging teeth.

Fuel Information

Mixing ratio 40:1 using high quality **air cooled two stroke oil**.

Use 95 Octane fuel avoiding biofuels or octane boosters.

Use freshly mixed fuel/oil.

At all times keep fuel mix container out of direct sun.

Mix only enough fuel for the job at hand.

Lubrication

Front Oil Tank - Do not fill with oil as powerhead does not dispense oil. See wax below.

All bearings on your Terrasaw are of a special sealed type which do not require any lubrication or maintenance. Due to the harsh abrasive nature of soil trenching, it is advisable to avoid any oil, grease or other lubrication on the digging chain during use, as this will attract dirt and increase wear.

Only the primary drive chain on your Terrasaw needs minimal lubrication.

PRIMARY DRIVE

Wax – not oil!

The primary drive chain should be given a 2-3 second spray of chain wax at every fuel stop (in light digging - every second tank) from the chain wax can as provided with your Terrasaw. (Always keep it with the Terrasaw).

To apply:

1. Loosen the Front screw holding the Terrasaw (Black) Drive cover.
2. Slide the drive cover forward just enough to expose the top of drive chain
3. Start Terrasaw and with a slow/low throttle setting apply a 2-3 second burst onto the rotating chain from the Chain Wax can nozzle aiming for the centre of the chain.
4. Turn off the engine and slide home the Terrasaw Drive Chain cover and reinstall the cover retaining screw.

Maintenance, Cleaning and Storage

Important: We advise frequent cleaning of the power head air filter with low pressure air. Power head cylinder cooling fins should also be inspected/blown out with low pressure compressed air every 8-10 hrs.

Note: In the same way that chainsaw operators need to regularly replace anti-vibration mounts and other wearable powerhead components, users of the Terrasaw will need to similarly maintain the power head in good condition.

When finishing work it is advisable to clean the digging chain and spray lightly with CRC or similar to prevent rust or corrosion while in storage. For longer-term storage the digging chain should be removed and soaked in a light oil or diesel. Clean other surfaces of the Terrasaw unit with a brush or damp cloth. Avoid using petrol, other cleaning solvents or harsh abrasives on labels. Remove drivechain guard, clean out any dust and dirt and refit to Terrasaw. Replace the scabbard and store your Terrasaw in a safe place.

Using the Terrasaw™ Wheel Support Accessory (WSA)



Warning: Electric shock can be fatal. Regardless of whether you are using the Terrasaw freehand or with the WSA system, remember to check the location of all underground services, especially electric cables, before you dig (see page 2).

Having assembled your WSA (refer instructions supplied with unit) lay the control handle on the ground.

Position the tongue (located) under the Terrasaw into the axle mount of WSA. Lock in place by sliding latching handle across into catch on Terrasaw.

Lift control handle and engage in notched depth adjuster.

Before starting powerhead:

Position throttle control assembly onto throttle handle of powerhead so that WSA throttle latch engages the power head throttle trigger. Secure in place by wrapping velcro strap around powerhead handle.

With engine still switched off, check for smooth throttle operation by operating remote throttle lever and adjust throttle cable slack as required using the in-line adjuster to ensure engine will safely return to idle once started.

Place towing strap around lower back and adjust length for comfortable operation. You are now ready for action! (Refer to powerhead operator's manual along with page 2 of the Terrasaw Operator's Manual for correct starting procedure).

Tips for Use

Start digging your trench and select a notch on the depth adjuster which gives both the desired trench depth and a comfortable operating position for the control handle. Before changing to a different notch, throttle off and allow your digging chain to come to rest so that you retain full control of the Terrasaw at all times.

When trenching with this attachment fitted, allow the trencher to dig at a rate at which the soil type/conditions allow. If excessive backwards pressure is used for the particular soil type/condition, the Terrasaw will try to 'surface' and the wheels will come off the ground. This situation places unnecessary strain on all componentry including the operator.

Happy Trenching!

Service and Parts

Your Terrasaw is professionally engineered and designed for easy servicing and parts replacement. During the warranty period if any non-routine servicing is required (i.e. other than digging or drive chain replacement) this should be referred to our service department or authorised service agent in order to maintain the warranty status. This work will be charged at the normal rates unless found to be a warranty item. Beyond this period you can order the required parts for convenient field or local replacement.

Never attempt to fit other than genuine Terrasaw parts, or modify your Terrasaw in any way. Not only will this invalidate any warranty; it may cause a hazardous malfunction and result in injury to either the operator or bystanders.

When ordering accessories, parts or service please quote:

- your Terrasaw model number (TS-400, TS-500, TS-700B, other)
- the serial number (stamped on the top of the main block)

Replaceable parts/accessories include:

Part Number	Description
22 - DC4	Digging Chain - complete loop, TS-400
22 - DC5	Digging Chain - complete loop, TS-500
22 - DC7	Digging Chain - complete loop, TS-700B
22 - DC4 - A	Alternative Digging Chain - complete loop, TS-400
22 - DC5 - A	Alternative Digging Chain - complete loop, TS-500
22 - DC7 - A	Alternative Digging Chain - complete loop, TS-700B
18 - DCB	Drive Chain Loop, suits 400/500/700B
9 - DSB	Digging Sprocket and Shaft, suits 400/500/700B
23 - SC4	Scabbard, TS-400
23 - SC5	Scabbard, TS-500
23 - SC7	Scabbard, TS-700B
TSB - WSA	WSA Wheel Support Accessory, suits 400/500/700B

Service Department

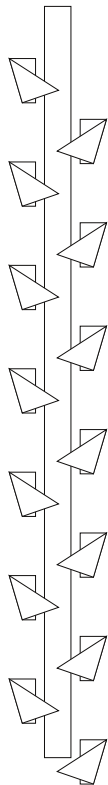
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Matakohe West Road, Matakohe 0594,
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Digging Chain Tooth Pattern : TS-500 (14 Teeth)

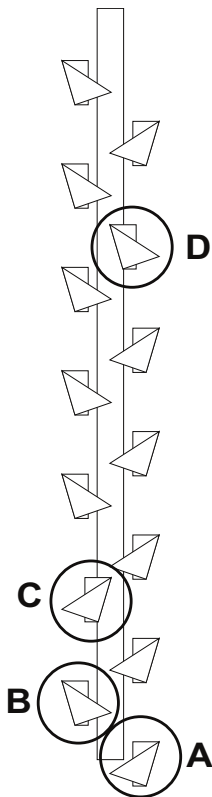
The following diagram represents the entire length of chain - viewed from above.

STANDARD PATTERN



ALTERNATIVE PATTERN

(For digging compacted ground - see also page 9)



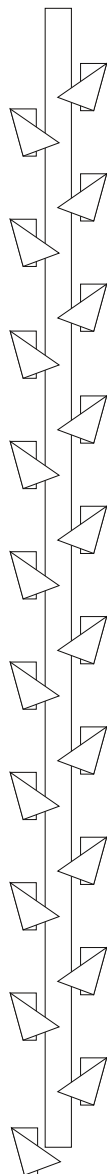
**Direction
of chain
travel**

Note: When ordering
replacement teeth specify
dig tooth type (A,B,C,D).

Digging Chain Tooth Pattern : TS-700B (20 Teeth)

The following diagram represents the entire length of chain - viewed from above.

STANDARD PATTERN

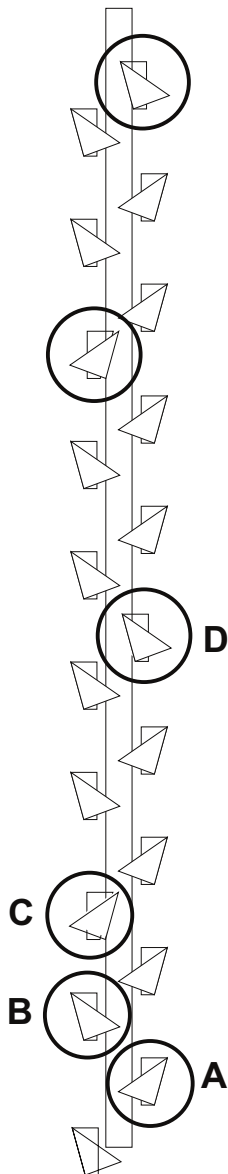


ALTERNATIVE PATTERN

(For digging compacted ground - see also page 9)



**Direction
of chain
travel**



Note: When ordering replacement teeth specify dig tooth type (A,B,C,D).

Terrasaw Limited Warranty

1. Terrasaw Industries will repair or replace, at its option, any new Terrasaw product which fails due to a defect in materials or workmanship during the applicable warranty period specified in section 2 below, subject to the exclusions as noted in Section 3.
2. The warranty period applicable to new Terrasaw products, depending on the end use of the product and product type, with coverage commencing from the date of sale, is 30 Days.
3. This warranty does not in any way cover
 - normal wear and tear
 - failure arising from improper use of the product
 - failure arising from improper assembly, maintenance or storage
 - failure arising from the use of parts not manufactured or supplied by Terrasaw Industries or its authorised agents
 - drive chain and ground-engaging items
4. During the warranty period, if any non-routine servicing is required (ie. other than digging or drive chain replacement) this should be referred to our service department or authorised service agents in order to maintain the warranty status.

If this Terrasaw product fails to comply with any guarantee in the Consumer Guarantees Act 1993, Terrasaw Industries will repair or replace the product, at its discretion.

The safe and correct use of this product is beyond the control of the Manufacturer. Terrasaw Industries will not be liable to any purchaser or any other person for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind however caused (including negligence) arising directly or indirectly from or in connection with any Terrasaw product and/or any failure of or any fault in any Terrasaw product. By way of explanation, we are not liable if you cause or suffer damage, injury or loss when using a Terrasaw product.

For handy reference, record your Terrasaw™ details here:

Model No.

Serial No.

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